

Name _____

STUDY GUIDE Chapters 8 and 9: Photosynthesis and Respiration

1. Name 4 forms of energy

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2. Living organisms primarily use _____ to store and release energy. Adenosine triphosphate has _____ phosphate groups, and energy is _____ when the bond between the last phosphate groups is broken.

3. Plants, algae, and some bacteria are considered _____ because they make their own food. Herbivores, carnivores, omnivores, and detritivores are considered _____ because they obtain their food by consuming other organisms.

4. Photosynthesis converts _____ energy to _____ energy. The reactants of this energy transforming reaction include _____, _____, and _____ while the products include _____ and _____.

5. The principle pigment in plants used to absorb light for photosynthesis is _____. It absorbs _____ and _____ colored light well but _____ green light, giving plants their green color.

6. The light-dependent reactions of photosynthesis use _____ to produce ATP. They also require _____, and produce _____ gas as a byproduct. The light-independent reactions are also known as the _____ and do not require light. ATP is used to produce sugars from _____ gas.

7. Name 3 factors that affect photosynthesis

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8. Explain 3 adaptations used by plants to prevent water loss.

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9. _____ releases energy from food in the presence of oxygen. The reactants of this energy transforming reaction include _____ and _____ while the products include _____, _____, and _____.

10. During glycolysis, _____ is broken down into _____. Glycolysis occurs in the _____ of the cell. During the Krebs Cycle, _____ is broken down into _____.

11. Glycolysis is considered an _____ process because it does NOT require oxygen. However, in the electron transport chain of cellular respiration, _____ is essential to produce large amounts of _____.

12. Explain 2 advantages and 1 disadvantage of using glycolysis to produce energy.

Advantages

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Disadvantage

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13. If oxygen is NOT present, cells can release energy through _____ following glycolysis. It occurs in the _____ of the cell.

14. The products of alcoholic fermentation are _____ and _____. Carbon dioxide is NOT given off in _____ fermentation, as pyruvic acid is converted to lactic acid.

15. Explain two useful applications of the waste products of lactic acid and alcoholic fermentation in the food industry.

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16. _____ occurs in plants, algae, and some bacteria, but _____ occurs in nearly all living organisms.

17. In which organelle does each of the following energy conversions primarily occur?

- Photosynthesis _____
- Cellular respiration _____

18. Explain at least three similarities and three differences between photosynthesis and cellular respiration.

Similarity

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Differences

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19. Explain why people often breathe heavier and faster when exercising.

20. How does temperature affect the rate of fermentation?